EGLERIA, A NEW GENUS OF CYPERACEAE FROM BRAZIL

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EGLERIA FLUCTUANS L. T. Eiten, gen. et spec. nov.

Fluctuans et submersa; caulis principalis crassus paulo ramosus; verticilli caulium gracillorum brevium sterilium ad intervallis 1-5 cm praeter caules principales dispositi; pedunculi crassi in apices caulium principalium surgentes; spicula terminalis solitaria multiflora; glumae indique imbricatae; tertius infimus glumae infimae tubulatus, basim spiculae circumdans; stamina 3; achaenium trigono-compressum obovato-truncatum eburneo-brunnescens, superficie cellulorum isodiametricorum; stylobasis angusta cylindrica, in media parte paulo latior. Ab Eleocharis modo ramificationis et caulibus duabus crassitudinibus et gluma infima spiculam circumdanti differt. A Websteria modo ramificationis et numero florum glumaeque in spicula differt. Habitat in Brasilia, Amazonas, Parentins, Lago José-Assú, in aqua amniculi in tempus repressa propter auctum lacus.

Plant aquatic, with floating stems forming thick masses; main root not seen; main stem (pieces seen up to a few dm long) slightly and irregularly branched, the branches always arising within a whorl of thin stems; internodes 1-5 cm long, 1.5 mm wide (as pressed in herb.), stems terminating almost always in an inflorescence, rarely terminating vegatatively in progressively shorter internodes to the tip; each node with a tubular membranaceous sheath 3 mm long and open distally, with lobed edges, but these generally torn and so appearing fringed; from each node a whorl of numerous thin, short, sterile stems arising at the base of and outside the above-mentioned sheath, the whorls in general directed laterally and alternately left and right along the main stem; the thin stems in a whorl 3-7 cm long, 0.1 mm wide, each with a tubular, membranaceous sheath ca. 4 mm long and 0.12 mm wide, with mouth obliquely cut and sometimes elongated into a lobe along the main vein; this whorl subtended by a short, wide, more or less triangular bract, and sometimes also by a few short thin roots; inside the whorl at the base are linear membranaceous fragments, apparently the remains of a bract or sheath that either enveloped subclusters of stems within the whorl or formed a second more basal sheath around each individual thin stem; the thin stems of one whorl more or less grouped in separate subclusters, some of which bear at the base a delicate enveloping sheath that has not yet fragmented; peduncles in apical groups of 2-6, each group including peduncles that arise from one or more points among a close series of a few terminal appressed nodes, each point subtended by flat or partially tubular bracts (from other points in the same apex

arise shoots of few to numerous thin stems like those in the lateral whorls); peduncles 5–8 cm long (not including spikelet), 0.6–0.8 mm wide, with tubular sheath 1.2–2.0 cm long and 1.0 mm wide, and with a shorter, more basal, enveloping bract, and occasionally with a few thin roots at the very base outside this bract; spikelet linear to linear-lanceolate, 7–10 mm long, 1.0–1.5 mm wide, with 12–15 glumes; basal glume 2.5 mm long, always closed (i.e. tubular) in its basal third, completely enveloping the spikelet base; the other glumes more or less rectangular, 2.5 mm long and half as wide; all the glumes thin, reddish-brown, frequently with longitudinal central part greenish-gray, the edges very thin, transparent and colorless; all glumes, including the lowest, fertile; stamens 3, lying appressed side by side between the pistil and the glume; filament not yet elongated, almost 0.5 mm long, swollen at connection to anther; anther linear, 1.2–1.3 mm long, including the extended 0.07–0.09 mm long connective; pistil in flower 5 mm long, the style and three long stigmas flat and ribbon-like, the stigmas with lateral spaced papillae; achene (the maturest seen) flattened-trigonous, almost appearing lenticular, obovate-truncate with persistent cylindrical stylebase, the achene (not including stylebase) 1.1 mm long and 0.8 mm wide, the stylebase 0.65 mm long and 0.16 mm wide, widest in middle, narrowed where joins achene; achene brownish ivory, surface with isodiametric, more or less cancellate cells, this surface texture and color also covering base of stylebase, the rest of the stylebase smooth and somewhat darker; bristles 5 (in the achene seen), with retrorse barbs.

Type- A. Ducke s/n, 29 December 1935, Brazil, Amazonas, Parentins, Lago José-Assú, "cabeceira grande, no riacho corrente porem cuja agua é durante algum tempo represada pela enchente do lago" ("large headwaters, in a running brook whose water is held back for the time being by a rise in the water level of the lake"). Holotype in herb. Univ. Brasília; isotypes M, NY, RB (acc. no. 34609), SP.

The previous description was based on the type collection only. The paratype collection is similar, differing in the following particulars: internodes 4.2–8.5 cm long and 1.0 mm wide; sheath on thin sterile stems 3.0–3.5 mm long; thin roots present in almost all whorls; peduncles 2–15 in a group, 9.5–15.2 cm long, with sheath 1.1–1.8 cm long; spikelets 8–9 mm long, 1.0–1.1 mm wide, with 10–12 glumes; filaments elongated, very long, thin and transparent, anthers past anthesis, mostly fallen. A. Ducke s/n, 20 July 1912. Brazil, Pará, Obidos, Enseiada da Cabeceira grande do Lago Sapucua. "Fluctua e cobre uma superficie consideravel" ("floating and covering a considerable surface"). Holotype in herb. Univ. Brasília; nearly 50 isotypes will be sent to herbaria in all parts of the world.

The genus is named in honor of the memory of Walter Alberto Egler, director of the Museu Goeldi in Belem, Pará, who made notable collections and valuable observations on the vegetation of the Brazilian Amazon.

The relationships of Egleria are with Eleocharis and Websteria, differing in the details shown in Table 1. It is like Eleocharis in the spikelet and achene, and like Websteria in forming floating masses and in the two contrasting forms of stems, the thick, fertile peduncles (which are probably held above the water surface) among a mass of thin, sterile, floating stems. Egleria can be imagined to have evolved from a branched rhizomatous species of Eleocharis which had spaced, erect stem clumps at intervals. The rhizomes became the main stems of Egleria, the culms of the clumps became sterile, and the fertile stems (peduncles) remained to arise only at the tips of a main stem branch that stopped growing. Websteria apparently evolved directly from Eleocharis also, but from another part of the genus. Both Egleria and Websteria became adapted to a floating existence; apparently in both the mass of thin stems helps the plant to float in still water or a current and supports the emergent thick peduncles.

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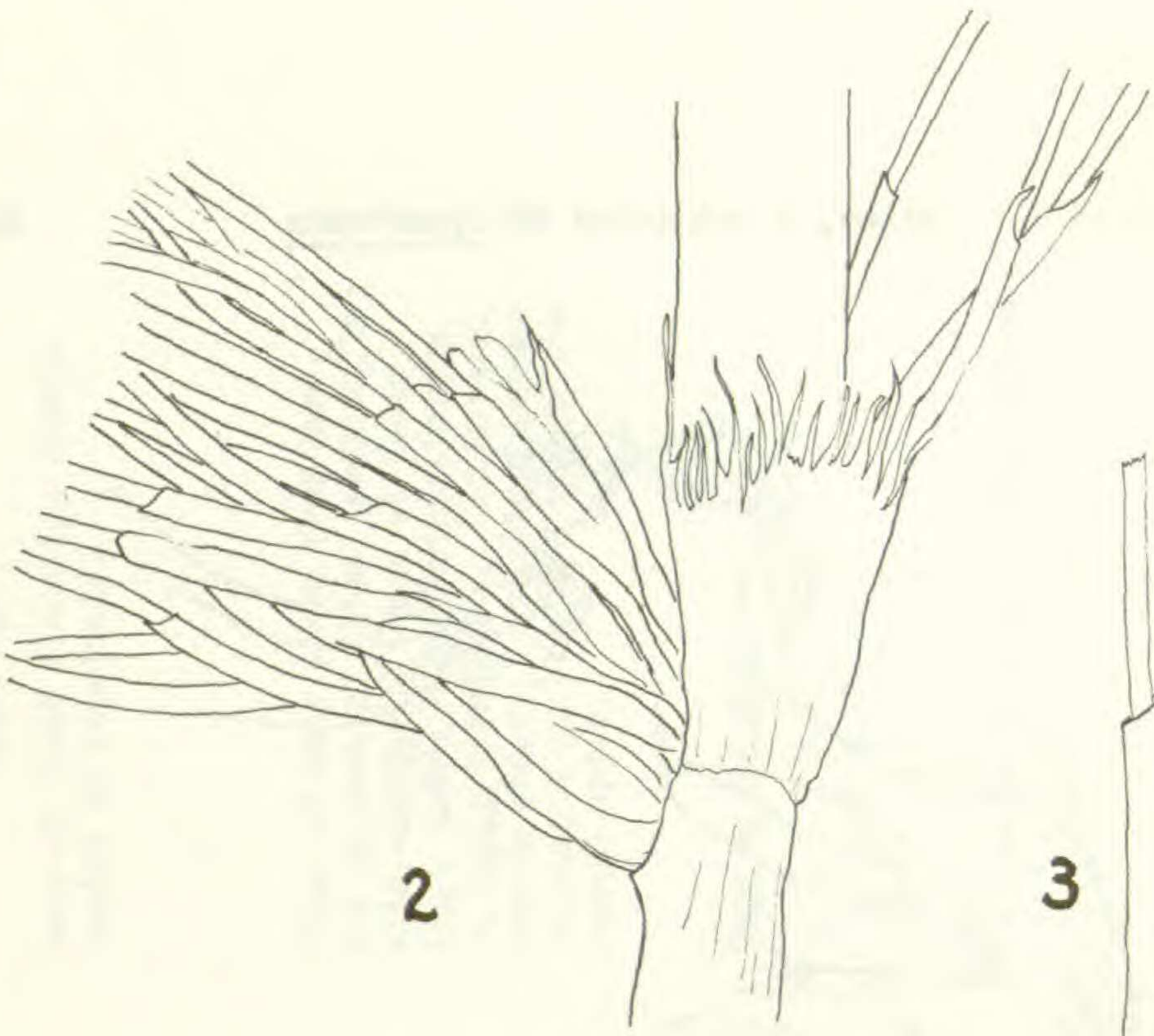
The illustrations are all from the type collection, almost all, including the achene, from the holotype.

Table I

	ELEOCHARIS	EGLERIA	WEBSTERIA
Habitat	Terrestrial in moist to soaking soil, or with base in water, or completely submersed & rooting in substrate, or mass of plant floating.	Mass of plant floating. (Base of plant and roots not seen.)	Mass of plant floating, clumps rooted in substrate.
Habit	Separate small or large clumps, or small clumps or individual culms arising along a rhizome (rhizome about same diameter as culms). In a few species a culm (with or without a spikelet) bearing a small, terminal, sometimes rooting shoot.	Main stem thick, branched slightly & irregularly. Whorls of thin short stems arranged along the main stem.	Clump of many stems from base, all or most of these (eventually) with whorls of stems at their tips, these with further whorls at <u>their</u> tips, etc., for several branch orders. The stems become thinner & shorter the higher the branch order.
Fertility of stems	All culms (eventually) bearing terminal spikelets. Some completely submersed forms are completely sterile or have more sterile culms than fertile ones.	Relatively few thick fertile stems (peduncles) in relation to large number of thin sterile ones.	<u>Same as Egleria</u>.
Spikelet	Few-many-flowered; spiral, rarely distichous. Lower glume(s) sterile. Very rarely 1-flowered between 2 large glumes.	Spiral; many-flowered, all glumes fertile (or at least, all glumes with flowers).	1-flowered between 2 large glumes.
Seed	With stylebase.	With narrow stylebase.	Without distinct stylebase. Apex of achene extends in a pointed cylindrical prolongation.

Fig. 1. Habit of Egleria fluctuans (slightly less than half natural size) showing branched main stem with whorls of thin sterile stems arising at nodes. The main stem branches terminate either with a group (simulating a whorl) of thin sterile stems and thick peduncles, or of successively crowded thin sterile stem whorls.



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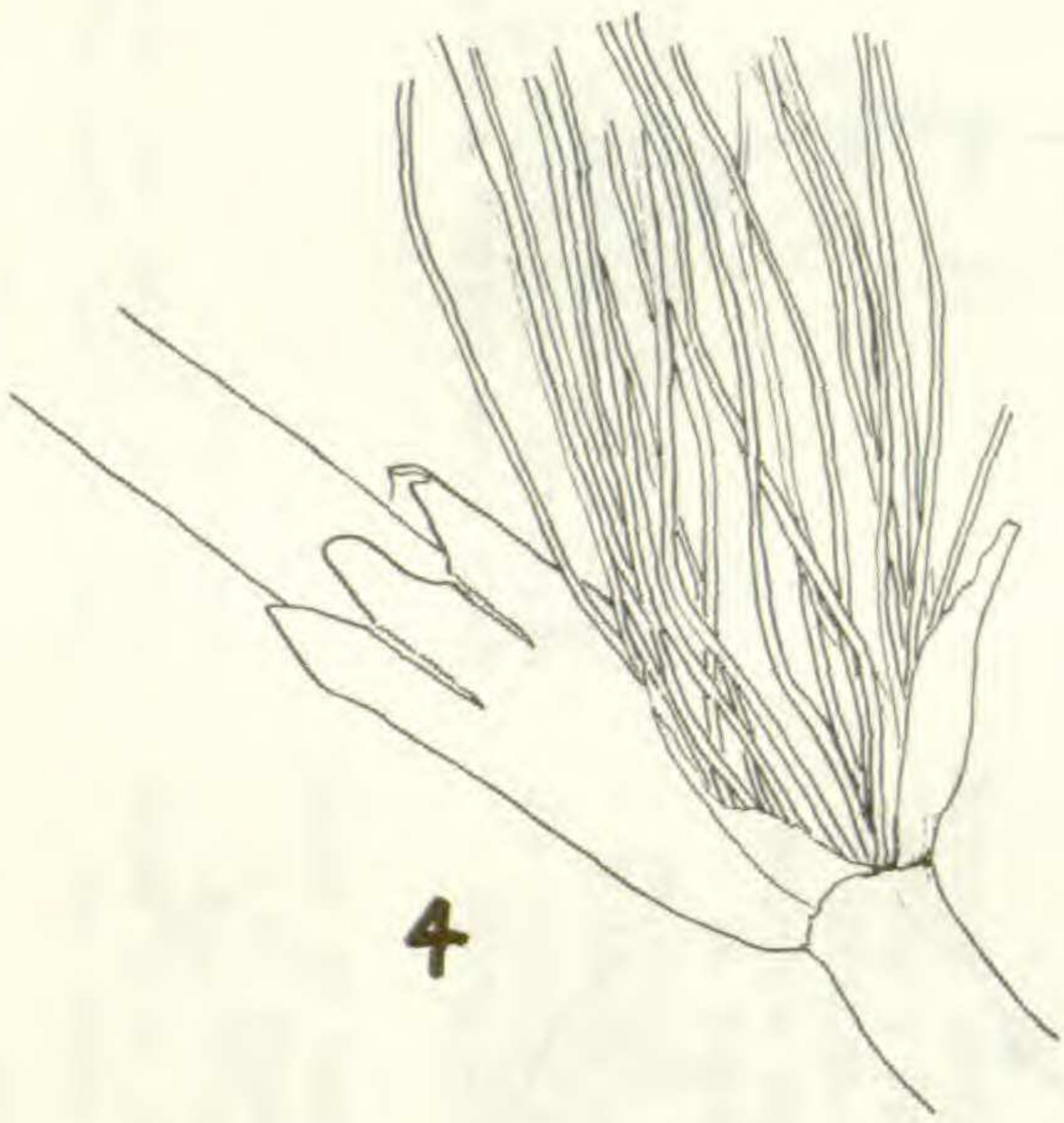

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Fig. 2 Detail at node of a main stem (x15) showing tubular sheath with fringed edge and the base of a whorl of thin sterile stems arising outside of and at the base of this sheath. (The few thin stems to the right are part of the same whorl that have become bent from their true position.)
Fig. 3. Detail of a thin sterile stem (x25) with basal tubular sheath.
Fig. 4. Detail at another node (x10). Lobed edge of main-stem sheath shown beginning to tear. The sheaths of the thin sterile stems not shown here.
Fig. 5. End of a main stem (x4) showing a "group" of points of origin on crowded terminal nodes (hidden by bracts) simulating a whorl. From one point is arising a thick peduncle with tubular sheath and basal clasping bract; from other points are young shoots (probably new peduncles); and from another point at left are two thin sterile stems. One or more bracts subtend the whole group.

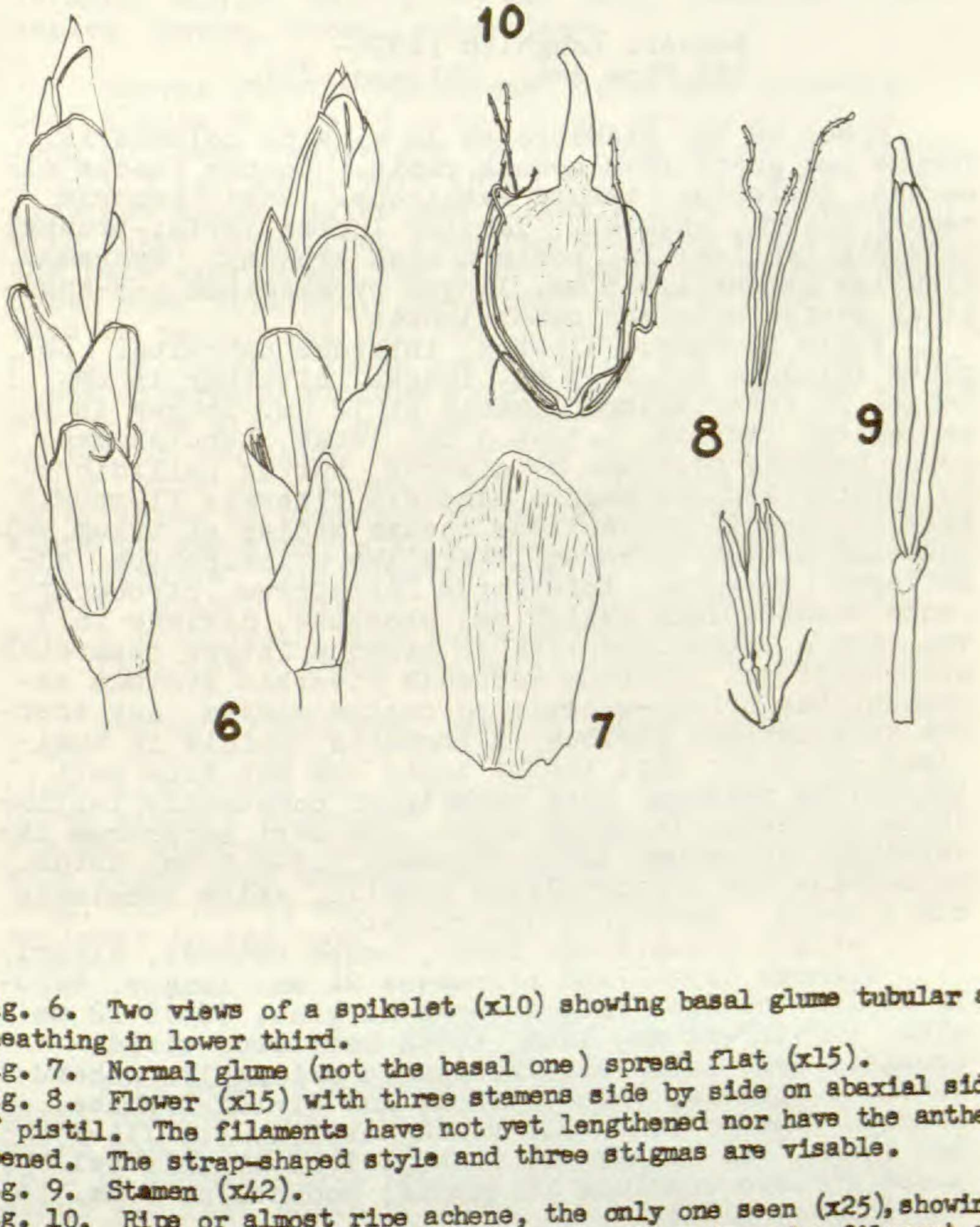

Fig. 6. Two views of a spikelet (x10) showing basal glume tubular and sheathing in lower third.
Fig. 7. Normal glume (not the basal one) spread flat (x15).
Fig. 8. Flower (x15) with three stamens side by side on abaxial side of pistil. The filaments have not yet lengthened nor have the anthers opened. The strap-shaped style and three stigmas are visable.
Fig. 9. Stamen (x42).
Fig. 10. Ripe or almost ripe achene, the only one seen (x25), showing flat side and 5 retrorsely-barbed bristles. Remains of a filament at left.